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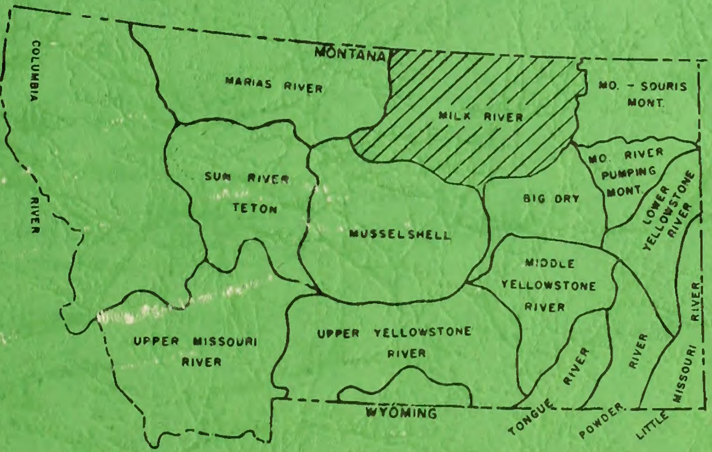
LAND PLANNING AND CLASSIFICATION REPORT

OF THE

PUBLIC DOMAIN LANDS

IN THE

MILK RIVER AREA



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A MISSOURI RIVER BASIN INVESTIGATION

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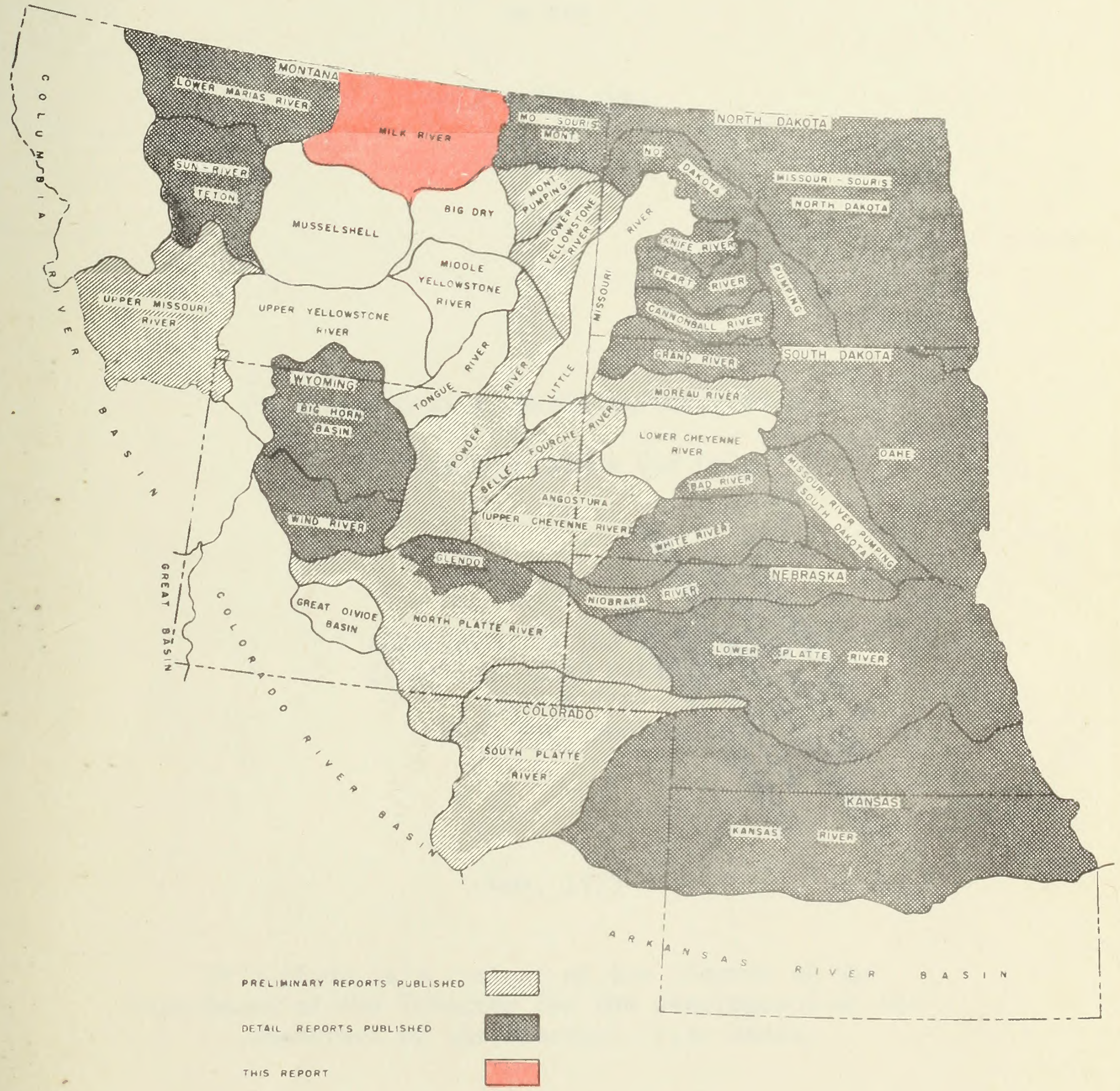
1953

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
REGION III
BILLINGS, MONTANA

JUNE 1953

PRESENT STATUS OF BUREAU OF LAND MANAGEMENT STUDIES IN THE MISSOURI RIVER BASIN

(LAND CLASSIFICATION)



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Preliminary
Land Planning and Classification Report
# of the
Public Domain Lands
in the

MILK RIVER AREA

Montana

(A Missouri River Basin Investigation)

For Administrative Use Only

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
REGION III
Billings, Montana

June, 1953

This study is a feature of the program of the Department of the Interior for the development of the resources of the Missouri River Basin.

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PREFACE

This report is concerned with the public domain lands within the Lower Milk River drainage area and the adjoining Missouri River drainage north of the river. The area is approximately the same as Montana Grazing District 1 of the Bureau of Land Management. The Missouri River and Fort Peck Reservoir form a definite division for administrative and land-use purposes. The area extends northward to the Canadian line, eastward to the Missouri-Souris area, and westward to the Marias River area.

The west boundary of the study area excludes the portion of the Milk River drainage in Glacier, Hill and Liberty Counties. These lands are covered by the Marias River area reports of the Bureau of Land Management. A part of eastern Chouteau County was added to include all of the land north of the Missouri River and east of the Marias River area.

This report was compiled to point out various conditions which prevail over the area and the influence they have had on the local economy. The past and present uses, administration, and settlement of public lands in general are described. Problems connected with the future use and administration of the public domain are outlined for further study. The sources of statistical and general information in this report include published reports and data from Government agencies. Field investigations were made by Albert H. Shunk, Land Economist, who with the assistance of C. R. Peteler, Range Conservationist, prepared this report. The accompanying map was prepared under the supervision of William C. Anderson, Engineering Draftsman. The over-all study was under the direction of R. D. Nielson, Regional Chief, Division of Lands, Region III, Bureau of Land Management, Billings, Montana.

Conditions and problems highlighted in this report are intended to benefit the management and development of public land resources and point the way to further study where needed. Subsequent reports on portions of the general area will include the detail study needed in connection with the public domain.

This study is undertaken as a part of the Missouri River Basin investigations of the Department of the Interior, which are being conducted to determine the inventory of and the proper use for the resources of the basin. Studies of public domain lands have been made for other areas in the basin, and others are in progress. Completion of reports among the 34 study areas in the basin are shown on the frontispiece progress map of this report.

GENERAL DESCRIPTION

The Milk River Basin report area extends from the United States-Canadian boundary southward 90 miles to the Missouri River and Fort Peck Lake in Montana. From east to west, it extends from the western boundary of Daniels County 160 miles to Hill County. The southwestern portion extends westward into Chouteau County to a point near the north bend of the Missouri River, as shown on the map of the area in appendix 1 of this report. The area includes Blaine and Phillips Counties, nearly all of Valley and a small part of Chouteau Counties. The drainage area is primarily that of Milk River, with the adjoining Missouri River drainage, as far south as the main channel and Fort Peck Lake. Boundaries of the study area coincide with those of Montana Grazing District No. 1 of the Bureau of Land Management, except for 25 townships outside of the district in Chouteau and Valley Counties.

Geology and Physiography

Surface features typical of the Great Plains extend over the entire area on a general eastward slope. The lowest point is 2,050 feet on the Missouri River, where it leaves the area; and the highest location is along the divide, between the Milk River and Missouri River. The divide between the two main rivers is prominent only where the Little Rockies and the Bearpaw Mountains rise sharply above the adjoining plain to an elevation of 7,000 feet. The fall along Milk River is quite gradual, from an elevation of 2,460 at the west boundary to 2,060 at the junction with the Missouri River, or approximately one foot per mile for the length of the channel. The Missouri River falls from 2,650 to 2,050 along the south boundary of the study area, at the rate of approximately two feet per mile.

While the general appearance of the area is that of a flat plain, considerable dissection has occurred over the broad bench lands; and deep channels have been cut where tributaries approach the Missouri River. The deeply eroded belt along this river is locally known as the Missouri River Breaks. The drainage system has not become well developed in the north portion, where glaciation closed many preglacial channels.

The effects of glaciation have influenced the present use of a large part of the area. Morainal material, glacial lake beds, abandoned river channels, and glacial drift are in evidence, especially over the north part and extending southward to the present channel of Missouri River; the exceptions being the Bearpaw Mountain and Little Rockies Mountain sections. Preglacial river channels now appear as broad valleys, mostly with heavy, fine-textured soils. According to geologic reports, the Milk River, from Havre east, is a former Missouri River channel; while Beaver and Larb Creeks were tributaries which carried drainage northward from the present Musselshell and other tributaries now actually south of the Missouri River. One gravel terrace in the northwest part and one in the northeast part are remnants of the preglacial Flaxville plain, which received little or no morainal material during the glacial period. The gravel layer ranges from a few feet to 100 feet in thickness, and consists of quartzite and argillite, derived from the Rocky Mountains, 300 miles west. At the present time, this Flaxville formation constitutes some of the best agricultural land of the area.

Glacial drift is relatively thin south of Milk River, and, in localities, consists only of rounded pebbles and a few granite boulders. Geologic formations are exposed on many slopes, and directly affect any soil which has accumulated. Since Bearpaw shale has a wide distribution on the portion of the area having little or no glacial drift, the overlying soil necessarily carries with it a high salt content characteristic of marine formations of the Cretaceous Age. The shale erodes rapidly; and the resultant topography is a badland type, which occupies most of the southeast portion of the area. Between the extensive badland area and the Missouri River is a young formation capped by sandstone, which has provided soil material of comparatively coarse texture and lower salt concentration. This is the Foxhill sandstone formation which tops much of the divide between Willow Creek and Fort Peck Lake in the south part of Valley County.

The two isolated mountain groups are sharp uplifts which have exposed igneous rocks, indicating a long period of erosion in the case of Bearpaw Mountain, and less erosion in the Little Rockies where slopes are precipitous. Though the mountainous sections are small, they have added a variety of physical features which contrast with the extensive plains area.

Fort Peck Lake occupies a conspicuous position on the south side of the study area. The lake was created by Fort Peck Dam, which was completed by the War Department in 1937. The lake is 189 miles long, and has a capacity of 19,412,000 acre feet. Impounded water has covered approximately 120,000 acres of bottom land and the adjoining belt of breaks which were formerly part of the land area north of the river.

Climate

Precipitation is the important factor of climate in its influence on the economy on extensive areas of dry-farm and native range land. Length of growing season and temperature factors are favorable for production of small grain and hay crops. Averages in precipitation vary little over the entire area, as indicated by a 54-year record at Chinook, 45 years at Malta, and a 55-year record at Glasgow. The normal annual precipitation at Chinook is rated two inches lower than that at the other two stations, indicating a gradual increase of rainfall from west to east. The seasonal normal is barely enough to meet the requirements of the principal crops, and any subnormal amounts may be disastrous when they occur in successive years.

Seasonal and annual precipitation for three weather stations in the study area are tabulated in table 1. The precipitation for the growing season is given as the total for the six-month period, April to September, inclusive. It averages approximately 75 per cent of the total annual amount. A record of wheat yields for Phillips County compared with the precipitation record shows a close correlation, with some exceptions, which may be due to distribution of rainfall by localities and distribution throughout the season. Critical moisture conditions are indicated for the period 1929 to 1937, with the exception of 1932, when low prices were the adverse factor for farming profits. Total rainfall in 1933 appears favorable on the record, but most of it came after a dry, hot July, too late to be effective in crop production.

Weather records at Malta show favorable conditions during the years when settlement of 320-acre homesteads was at its peak, from 1911 to 1916. The years 1915 to 1916 were especially good, as indicated by rainfall records and by crop yields. Three dry years followed (1917 to 1919), and a severe winter was experienced in 1919-20. Seasonal and annual precipitation at Malta for the years 1910 to 1950 are shown in table 1 and in graphic form in figure 1. The annual yield of wheat per acre for Phillips County, and with price per bushel for Montana, are shown in the same graph.

The average frost-free period is 129 days at Chinook, 133 days at Malta, and 123 days at Glasgow. Maximum temperature at Glasgow was 113 degrees; and the minimum -59 degrees. The number of hours of sunshine during the growing season is high due to the number of clear days and to the long period of daylight during the summer. Relative humidity is comparatively low.

Winters are severe for livestock because of low temperature and lack of protection. Much of the north half of the area is bleak and subject to extreme blizzard conditions. In the southwest part, the winter conditions are not so hazardous, since chinook winds cause breaks in the winter temperature, which are not experienced in the northeast portion. Crusted snow is apt to result in losses of livestock and antelope, because it makes range feed practically unavailable to these animals.

Table 1. - Annual and Seasonal Precipitation at Chinook, Malta, and Glasgow, Milk River Basin Area, Montana 1/

	Chinook		Malta		Glasgow	
Year	Annual	Seasonal	Annual	Seasonal	Annual	Seasonal
1910			6.32	4.33		
11			18.28	13.60		
12	13.22		17.56	16.36	17.90	
13	11.82		11.19	7.67		
14	14.63		13.42	10.81		
15			16.03	13.28	16.73	
16			15.72	9.47	20.47	
17	9.41		8.73	5.36	7.83	
18	8.01		9.18	7.29	11.65	
19	9.77		9.18	7.15	7.74	
20			16.25	14.15		
21	14.75		16.59	10.25	16.96	
22	12.24		12.41	10.46	15.18	
23	15.72		16.65	14.92	19.37	
24	13.99		14.35	11.34	18.28	
25	15.86		14.34	11.29	13.24	
26			11.37	8.68	11.74	
27	21.45		22.76	18.39	20.37	
28	11.39		13.55	11.86	9.79	
29	13.28		13.75	8.98	11.60	
30	11.81		10.07	7.76	8.38	
31	9.33		7.12	5.92	9.53	
32	19.27		17.50	13.73	15.08	
33	17.78		16.67	13.13	14.80	
34	11.54		9.03	7.40	6.83	
35	9.33	5.71	8.73	6.45	10.02	7.01
36	9.69	5.73	7.28	4.15	7.93	4.88
37	13.03	10.13	12.52	8.96	7.70	3.68
38	20.36	15.24	18.67	12.23	20.85	15.79
39	12.14	9.19	14.12	11.69	13.51	10.89
40			16.21	12.01	14.40	11.16
41	14.19	11.74	13.27	10.75	12.86	9.23
42	18.05	13.86	15.68	12.76	13.39	9.77
43	12.00	8.44	14.08	9.60	12.40	8.75
44	13.76	11.74	11.97	9.66	14.15	11.35
45	11.34	7.70	10.86	6.89	10.82	6.70
46	9.78	7.18	12.46	10.20	13.76	10.76
47	10.91	9.36	12.83	10.83	15.12	12.94
48	9.68	7.69	10.67	8.62	14.24	11.10
49	9.90	6.20	7.58	5.10	8.47	5.10
1950	14.04	10.10	10.75	7.94	19.02	15.03
Average	10.91	8.12	13.60	10.62	13.01	9.54
Per cent of Annual		74.4		78.1		73.3

1/ Compiled from Weather Bureau Records, Climatological Data, Montana Section. Seasonal precipitation is April to September inclusive.

Land Resources

Of the total acreage in the area, approximately one-fifth is used for crop production, and the remainder is native grazing land. The percentage of crop land is slightly higher in Valley County than Phillips and Blaine Counties. One-seventh of the crop land is irrigated, the highest percentage being in Blaine and the lowest in Valley County.

Since rainfall over the area is quite uniform and averages near the minimum requirement for dry farming, the location of crop land is limited to lands most suitable for that purpose. Largely because of conditions, most of the crop acreage is located north of Milk River. Irrigated lands are located on Milk River bottom and along small streams which originate near the Bearpaw and Little Rocky Mountains.

Native range varies widely in forage productivity, primarily because of differences in soil. The poorer grades of grazing land occur in the breaks of the Missouri River and on shale exposures elsewhere. Extensive areas of inferior grazing lands are found in the southern and southeastern part of the area where poor sites and shale soils predominate.

Water Resources

Water resources are quite limited because of the intermittent nature of most of the streams. The Missouri and Milk Rivers, and the reservoirs connected with them, afford a permanent water supply originating from extensive mountain watersheds remote from the report area. Runoff within the area occurs mainly during the spring thaw and during May and June when rainfall is heaviest.

Volume of annual water flow in the Missouri River averaged 5,139,000 acre feet at Loma, 25 miles west of the report area, for the ten-year period, 1940 to 1949. At Power Plant Ferry, south of Zortman, the average 10-year flow was 6,452,000 acre feet. The monthly flow at Power Plant Ferry is highest in June, and next highest in May, as reported by the U.S. Geological Survey in circular No. 108. At a point below Fort Peck Dam, the flow was 5,278,000 acre feet for the same period, indicating a loss of 1,174,000 acre feet from evaporation and seepage from the lake.

The Milk River flow at Lohman, near the west side of the area, averaged 242 cubic feet per second during the period 1938 to 1943. At Nashua, near the east side, the average flow of 795 cubic feet per second was measured for the same period. The maximum discharge at these two points was 3,450 cubic feet per second at Lohman, and 17,400 cubic feet per second at Nashua. Drainage from Canada amounted to 275 cubic feet per second annually on eleven tributaries measured near the international border for the period 1938-1943. The main channel of Milk River averaged 297 cubic feet per second at the international boundary for the same five-year period. These records were taken from U.S. Geological Survey water supply paper 1077.

Water storage has been provided on Milk River by the chain-of-lakes system, including Dodson, Nelson, and Vandalia Reservoirs located within this area. Bowdoin Lake is supplied with water during the non-irrigation season for migratory bird propagation. Smaller reservoirs have been built on Porcupine, Rock,Frenchman, Whitewater, and other creeks. The largest storage basin is Fort Peck Lake, provided on completion of Fort Peck Dam by the War Department in 1937.

Vegetation is of the grassland type over most of the area, though a mixture with sagebrush is common over an extensive portion of soil types derived from shales, which prevail in the south part. The grassland type is general where part of the land is suitable for dry farming. The grasses and grass-like species in this type are largely blue grama (Boutelona gracilis), needle-and-thread (Stipa comata), bluestem wheatgrass (Agropyron smithii), Sandberg bluegrass (Poa secunda), and threadleaf sedge (Carex filifolia). A club moss (Selaginella densa) is abundant north of Milk River, and covers much of the surface in spring. It has little forage value, but is of some importance for its ability to prevent erosion. Bluestem wheatgrass is found on heavier soil, especially in over-flow areas. Practically all of the important grass species in the area are highly palatable to livestock.

Sagebrush found in the area is dwarfed in size, excepting where it grows on deep bottom soils. Greasewood is common on poorly developed saline soils. In areas of public domain concentration, south of Milk River, bluestem wheatgrass is one of the chief forage species. The Pierre clay loam soil, on which the species is widely distributed, normally supports a sparse stand of native forage, unless seasonal moisture conditions or accumulations are especially favorable. During successive seasons of drought, the root stalks of western wheatgrass remain dormant, and very little new growth appears above the surface. The result is a range practically without forage over an extended period of low rainfall. These conditions prevail on approximately half a million acres in south Phillips and Valley Counties.

Timber is limited to rough slopes in the Little Rockies and Bearpaw Mountains. A woodland type, containing ponderosa pine and Rocky Mountain juniper, is found in the Missouri River breaks. Plains cottonwoods provide considerable shade along the Milk River bottom lands. They also occur sparingly along channels of the larger tributaries. Absence of trees is characteristic of this northern plains country.

Soils

Soils are derived from glacial drift over much of the northern part of the area. Further south, the layer of glacial drift becomes thin or consists only of boulders and water-worn gravel. Underlying marine shales have influenced soil development in the large area south of Milk River where Bearpaw shale is exposed on eroded slopes. There is a noticeable darkening of soils from west to east, resulting from increase in rainfall. Other factors have caused wide variations locally in character of soil. In general, the more productive soil types are comparatively low in salinity, and have a texture and structure which allows penetration of available water, and which provides good storage capacity for this water supply. Because of low rainfall, only the most suitable soil types have been kept in crop production.

The darker well-developed soils, which extend into the eastern part of the area, are classified as Daniels loams. The color of the four-inch surface layer is described as dark grayish brown. Much of the acreage occupied is under cultivation in the vicinity of Opheim. The Scobey soils extend far westward from the Daniels series, and are also derived from glacial drift. These soils have a light brown color and do not have the mature profile typical of the Daniels series. Cultivation is quite general, but limited, to considerable extent, by drainage channels and coarse morainal material. Overlying the preglacial gravel benches, the Turner fine, sandy loam constitutes good farming acreage on the big flat near Turner, Montana. Quartzite gravel occurs below a depth of thirty inches in this soil type.

Irrigation is largely restricted to alluvion in Milk River Valley. The texture of this alluvial soil is finer east of Saco than it is at Malta and westward. On the heavier bottoms, penetration is accomplished by flood irrigation for hay production, largely from bluestem wheatgrass, locally known as bluejoint.

Grazing lands in the glaciated areas occupy mostly Scobey stony loam soils. Pierre shale is exposed along deeper channels in the same general area. South of Milk River are extensive areas of Pierre clay loams and Phillips loams, derived largely from underlying shales of marine origin. The surface is undulating to broken, and exposed shale material is generally vulnerable to erosion. A wide area in the south half of Phillips County is classified as Phillips loam, a type with numerous distinctive depressions or slick spots. Very little vegetation becomes established in these blowout holes where the "claypan" is exposed.

Pierre clay loams are widely distributed over the southern portions of Blaine, Phillips, and Valley Counties. In Valley County, Lismas clay loam represents a raw and unweathered phase of Pierre clay loams. Areas with little or no soil accumulation are locally known as badlands, and these are extensive in that portion of Valley County located south of Milk River.

Mineral Resources

Gold mines in the Little Rockies produced five million dollars worth of gold per year in the years shortly after the mines were opened in 1904. In the years 1938 to 1940, the production was valued at $250,000.00 per year. Since World War 2, the sole remaining mine has operated at one-third to one-half capacity. The biennial report by the State Board of Equalization values the 1949 gold-ore output at $92,397.00. The Landusky mine was abandoned in 1942. The Zortman mine is still in operating condition. The U.S. Geological Survey reports limited mining of lead and zinc in Bearpaw Mountains, and silver in the Little Rockies, in addition to the substantial amounts of gold in the Little Rockies.

Coal production on a commercial scale is reported by the State Board of Equalization at 860 tons for 1949 in Valley County. Reserves estimated by the U.S. Geological Survey are 3,500,000 tons sub-bituminous in Phillips County, 39,730,000 tons sub-bituminous in Blaine County, and 257,930,000 tons lignite in Valley County. The 1949 production of gas was 1,017,415 thousand cubic feet for Blaine County, 7,044,480 thousand cubic feet for Phillips County, and 1,003,722 thousand cubic feet for Valley County. Oil production amounted to 1,729 barrels in Blaine County during the same year.

Recent exploration of the Williston Basin for oil and gas will extend into the report area, since the area is reported to be within the structure. Prospecting for new fields is now in progress, and wells were being drilled in November, 1951. Oil and gas leasing is very active in the area. Mineral rights on a large portion of the area are the property of the federal government. Public domain is 23 per cent of the area, and mineral rights were retained on stock-raising homesteads. A considerable portion of the area has been patented with mineral rights being retained by the government. Applications for mineral leasing of government-purchased lands are also processed by the Bureau of Land Management.

Oil was discovered in the Bowes Field in Blaine County in 1926 and 1949. Three 3,400-foot wells were drilled to the Eagle and Ellis sands in 1950. Four wells produced 61,263 barrels of oil in 1950.

Four additional wells were completed in the first nine months of 1951. Eight new wells were drilling in or near this field in October, 1951. Before 1950 the field had been a gas producer, only 1729 barrels of oil being produced before that year.

Settlement History and Population

Trappers were the first white men to utilize the resources of the area. Trapping and Indian trading actively developed in the Milk River and Missouri River Valleys after the establishment of Fort Union, 180 miles eastward, in 1832. Fort Peck and Fort Belknap were military and trading posts established within the area at later dates. Early day access to the area was by river boat on the Missouri and by canoe on the Milk River.

Settlement of the area commenced with the establishment of the Fort Peck and Fort Belknap Indian Reservations in 1877. Unreserved Indian lands were opened for entry in 1887. Cattlemen moved into the area and began to take up the river bottoms, water holes, and winter grazing lands south of the Bearpaw Mountains. These early settlers were French trappers and Scotch livestock operators. Cattle, horses, and sheep owned by large outfits utilized nearly all of the area as open free range prior to 1903. The dry years of 1902 and 1903 forced many of the cattle companies out of business. Local stockmen began to operate smaller herds. Sheep were introduced into the Milk River area in the Nineties. At times in the past, they have used more of the range than cattle. In the last ten years, sheep numbers have decreased in the area due to a shortage of labor and high labor costs.

Irrigation development preceded dry farming in the area. The cattlemen developed irrigation for hay in the Eighties and Nineties, as well as utilizing the naturally irrigated overflow bottom lands for hay and pasture. Irrigation projects were opened for settlement in Blaine County in 1895. Development of the large irrigated area in the Milk River Valley began in 1900.

Dry farming started feebly about 1906, when the Montana Agricultural Experiment Station established a demonstration farm near Twete. While the Great Northern main line provided transportation with its construction in 1888, active settlement did not take place until 1908. From that year until 1910, most of the land suitable for farming within twenty miles of the tracks was taken up by homesteaders in 160-acre tracts.

Land offices were opened at Glasgow and Havre in 1907 for the convenience of settlers. In 1912 and 1913 the Great Northern constructed two branch lines in the area and actively promoted settlement by excursions and advertising. Settlement of nearly all of the smooth lands more distant from the tracks took place between 1912 and 1914. This land was taken up in 320-acre tracts after being surveyed and subsequent to the enactment of the 320-acre enlarged homestead law in 1909.

Settlement and breaking of the prairie for dry farming progressed rapidly from 1908 to 1917. Land values rose rapidly with these years of favorable moisture, consequent good crops, and fair to good prices. These trends ended in 1917, with the beginning of three years of severe drought. Crop acreage was greatly reduced, and marginal lands were abandoned. The livestock operators were curtailed by the drought and by a severe winter in 1919-1920. Losses of crops and livestock in these years of drought caused many failures in the area. These losses caused foreclosures, resulting in the concentration of large acreages of farming and grazing lands in the ownership of mortgage-holding companies.

Depressed agricultural prices continued to hold down the wheat acreage planted in the early Twenties. Better prices and favorable climatic conditions increased settlement and wheat planting in the period from 1924 to 1928. This development was halted by drought and lower prices beginning in 1929, becoming especially severe in 1932, when wheat was valued at 35 cents per bushel. The dry years of the Thirties reduced population, closed schools, and eliminated some dry farming towns. Population was reduced in the cities, and many business establishments were closed. Farm-mortgage foreclosures were relatively few in comparison with the number of foreclosures made in 1921 to 1925 following the dry years of 1917 to 1919 and the collapse of farm prices in 1921. Relief, seed loans, Farm Credit Administration loans, AAA payments, resettlement activity, the WPA, and the FSA made it possible for many farm and ranch operators to retain their holdings and stay in the area despite the unfavorable natural and economic conditions. Without Government aid, nearly all of the dry-farm land would have reverted to range land, and population would have been reduced much further. Better prices and favorable climatic conditions increased settlement and wheat planting in 1924 to 1928.

Rural communities suffered a rapid decline in population, schools, improvements, and income. Counties acquired much of the land through tax delinquency, largely from absentee owners. The Bankhead-Jones Farm Tenancy Act of July 22, 1937 authorized the Secretary of Agriculture to develop a program of land conservation and land utilization, including the retirement of lands which are submarginal or not primarily suitable for cultivation. Nearly a million acres of private lands were purchased with FERA funds in Blaine, Phillips and Valley Counties, beginning in 1934. Prices paid for the tracts were as low as fifty cents per acre. Landowners who were still in the area at the time of sale moved to better farms or to the larger towns, and buildings were salvaged or destroyed. Crested wheat grass was seeded on most of the abandoned farm lands by the Resettlement Administration. The few settlers who stayed made adjustments and began on a profitable basis in 1938, when more favorable climatic and economic conditions prevailed.

Much of the land used for dry farming is marginal or nearly so. Precipitation and its distribution are limiting factors in crop production in the area. Success in production and good prices promote increased acreage in wheat. A succession of favorable years and good prices has brought the producing area to an all-time high figure in 1951. The general adoption of strip cropping, alternate cropping, and trashy tillage, combined with the use of large-scale machinery and new-type equipment, have resulted in improved prospects for crop production every year, at a good margin of profit.

Approval of the construction of Fort Peck Dam in 1933 started purchase of private lands in Missouri River bottoms by the War Department, and, at the time of completion of the dam in 1937, only a few of the inhabitants remained. By 1940, nearly all of the river bottom in the reservoir area was flooded. The bottom lands submerged in this reservoir site had been used for alfalfa seed and hay production, and for headquarters locations of cattle ranches.

Census figures for 1920 to 1950 show a decline in population for all counties involved amounting to 12½ per cent. The loss in Phillips County was 32 per cent, while that in Valley County was only 2 per cent. A gain in population amounting to 74 per cent is shown for county seats of Blaine, Phillips, and Valley Counties. The county seats are the only important towns in the three counties. The population of other towns and rural communities declined during the thirty-year period.

The 1950 census of the three principal counties is given below:

	County	County Seat
Blaine County	8,473	
Chinook, City of		2,299
Phillips County	6,343	
Malta, City of		2,085
Valley County	11,320	
Glasgow, City of		3,810
Total	26,136	8,194

Public Facilities

The main line of the Great Northern Railway crosses the area along the Milk River from east to west. A branch from this line extends to the north from Saco to Hogeland; and another extends westward into the area of Opheim, in the northeast portion of the area. U.S. Highway No. 2, a paved road, crosses the area parallel to the main railway line. Several graveled roads extend northward and southward from points along the main highway. A segment of a proposed north and south highway is paved for thirty-five miles south of Malta and some distance north. The only portion of the area not well supplied with automobile roads is the south part of Valley County.

The U.S. Customs Service maintains two stations in the area. One port of entry at the Canadian boundary is located north of Turner, and the other is north of Loring, Montana. No regular air routes cross the area, but landing fields are provided in the larger towns. Some of the ranches have their own planes and landing fields.

Electric power is supplied to all towns along the Great Northern Railway by transmission lines of the Montana Power Company and of the Bureau of Reclamation. Power originates at Great Falls and Fort Peck generators. Further distribution is obtained over rural electrification lines valued at over one-half million dollars, and controlled by three cooperatives affiliated with the REA. Montana-Dakota Utilities Company provides natural gas to all towns along the Great Northern railway. Gas is obtained within the area on Bowdoin and Bowes gas fields. Telephone lines have been extended to many rural communities during recent years.

Power totaling 50,000 kilowatts is produced at the Fort Peck hydroelectric plant with two turbo generators. A third turbo generator is being installed, and is scheduled for production of an additional 35,000 kilowatts in February, 1952. The Corps of Engineers administers the production of this power, delivering it to the transmission lines of the Bureau of Reclamation. The Bureau of Reclamation operates three power transmission lines in the area. Two of these lines transmit 115,000 volts each eastward from Fort Peck to Wolf Point, Montana. The third line carries 161,000 volts westward across the area from Fort Peck, along the Milk River Valley to Havre, and thence to Great Falls.

Community activities are centered at county-seat towns for the most part. Because of the reduction in population of many of the smaller towns, theaters, and other facilities, have been abandoned. Improvement in roads, and the wide use of good cars, have also increased the preference for large towns. In rural communities, there has been a general abandonment of one-room school houses. School bus service has been extended along the Milk River Valley, giving all children an opportunity to attend high school, as well as grade school, in well-equipped school buildings located in the larger towns. In sparsely settled rural communities, it is necessary, in many cases, to move children to towns for school attendance. The nearest college is Northern Montana College at Havre, located eight miles west of the area.

A county extension agent in each county maintains active participation in 4-H and other clubs among rural and urban communities. Boy and Girl Scouts, and other groups, meet at recreation centers at Sandusky, The Pines, and Legion Plunge.

Trade and Industry

Grain elevators provide storage and sales facilities at all railroad shipping points. Facilities for shipping livestock are also available at each of these towns. Farm supplies may be purchased in all of the towns located along the main line railway and the two branch lines. Trucks carry the freight to and from outlying points, a distance of 70 miles or less. Very little shipment is routed southward because of poor roads and the necessity of ferry service over the Missouri River. Spring wheat, livestock, and beet sugar are the principal products of the area. There are two flour mills in the area.

Wheat, cattle, and sheep make up the bulk of the freight shipped out of the area. Most of the wheat is shipped eastward to St. Paul-Minneapolis markets, while a smaller proportion of the livestock is shipped in the same direction. The dividing line between east and west shipping is located in the western part of the area, but it is moving westward with the growth of the population on the West Coast. Shipments into the area include considerable amounts of livestock feed protein concentrates, especially cottonseed cake, for winter use. Normally, thirty to forty carloads are received at Malta, and proportionate amounts are received at other main marketing points. Hay is shipped in during severe winters.

Metal mining is restricted to a limited gold output in the Little RockiesMountains, valued at $92,397 in 1949. The State Board of Equalization reported 1,660 acres of patented mining claims in 1950, valued at $8,302.00, in Phillips County. Coal mined in Valley County was valued at $2,581.00 for 860 tons. The gross value of oil and gas produced in the three counties amounted to $453,662 in 1949. Three fields are included: Bowdoin, Box Elder, and Bowes.

The sugar factory at Chinook processed 86,272 tons of beets in 1949. The average yield of beets was 10.8 tons per acre. Operations of flour mills at Chinook and Glasgow produced railway shipments amounting to 83 carloads of flour in 1949, in addition to the amount marketed locally and that shipped by truck. Trade, service, and transport enterprises, combined with governmental activities, largely support the cities, towns, and communities in the area.

The kinds of crops and amounts available for market are indicated by the following list of carloads shipped from Great Northern mainline points in the area in 1949.

Cattle	1,592	Potatoes	66
Wheat	1,307	Hay	61
Beets	1,009	Hogs	45
Sheep	587	Wool	37
Sugar and syrup	429	Flax	1
Horses	133	Honey	1
Flour	83	Others	28

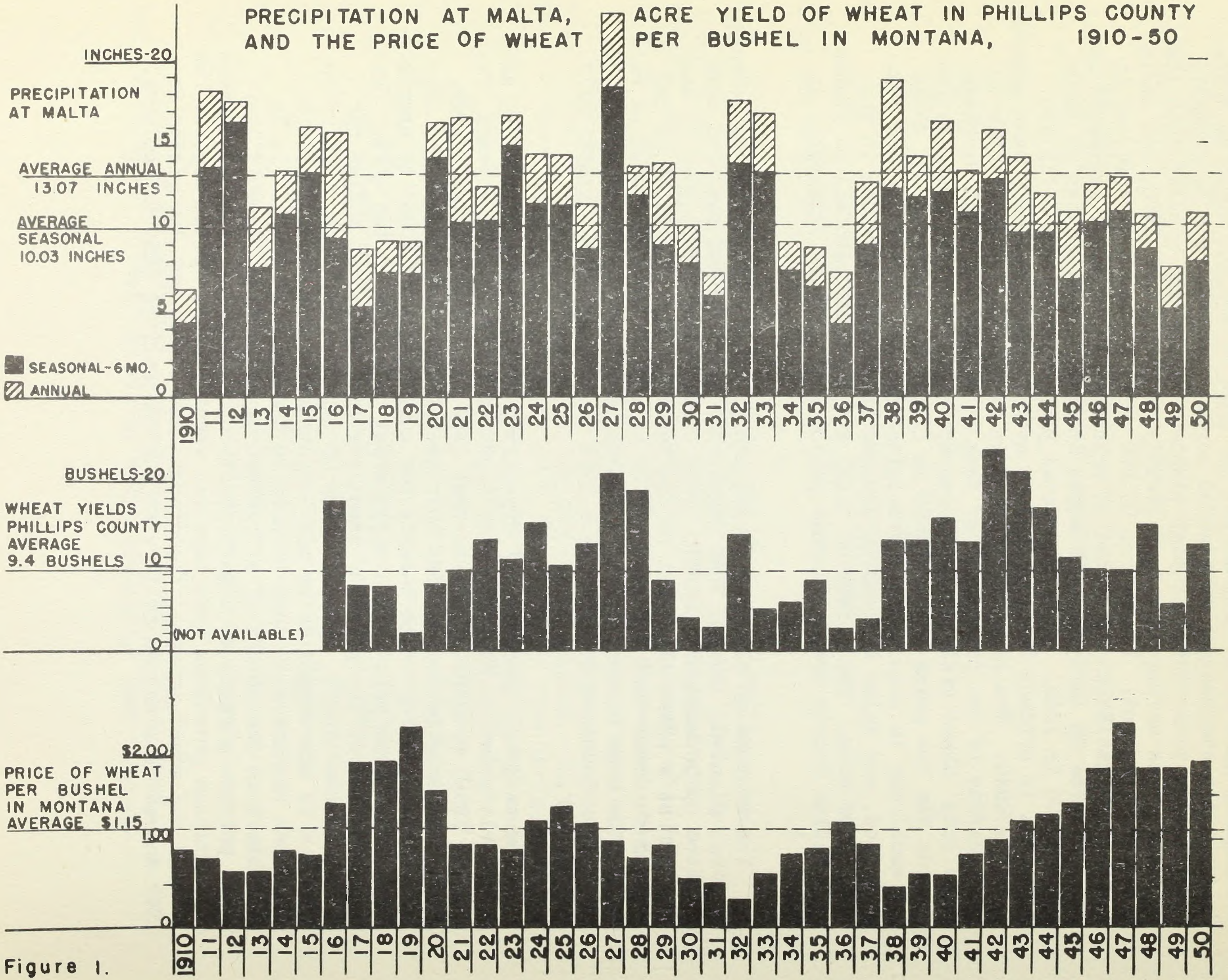
Land and Water Use

Approximately one-fifth of the area of Blaine, Phillips, and Valley Counties is cropland, and the remainder grazing land. In 1949, within the three counties, 24,200 acres of irrigated and 465,300 acres of non-irrigated spring wheat was harvested, of which over half was in Valley County. In 1949, the total harvested winter wheat acreage was 9,000 acres, of which 200 acres were irrigated. There were 6,500 acres of the 8,800 acres total of dry-land winter wheat grown in Blaine County, near the Bearpaw Mountains. Of the total 28,800 acres of oats harvested in 1949, 13,300 acres were irrigated. In the total of 33,200 acres barley harvested in 1949, 10,000 acres were irrigated. Hay was cut on 166,100 acres in 1949, of which 90,600 acres were irrigated. Sugar beets were harvested on 7,650 acres of irrigated land in 1949 in three counties. Alfalfa seed, potatoes, corn, flaxseed, and less important crops were produced on 8,310 irrigated acres and 14,520 dry-farmed acres in 1949. Total area harvested on irrigated land was 154,260 acres in 1949, and the total harvested on dry-farm land was 602,820 acres. The total 154,260 acres harvested on irrigated lands in 1949 represents 20.4 per cent of the total harvested and 14.5 per cent of the total planted to all crops in Blaine, Phillips, and Valley Counties. The highest per cent of irrigated cropland is in Blaine County, and the lowest in Valley County.

Statistics on harvested crop acreages for 1920, 1930, 1940, and 1949 indicate an increase in winter wheat acreage in 1940, and reduction in 1949 to a little more than in 1920. Spring wheat acreage was high in 1930 at 507,300 acres, and down to 489,500 acres in 1949. However, the abandonment of planted acreage in 1949, due to drought, indicates that the total acreage planted in 1949 was greater than that in 1940. Oats acreage has been greatly reduced since 1920, and barley has been increased. Flax, from 83,200 acres in 1920, was reduced to 4,500 acres in 1949. The total of principal grain crops harvested was 482,400 acres in 1920; 626,600 acres in 1930; 484,100 acres in 1940; and 571,700 in 1949. Since the total planted in 1949 was 715,400 acres, it is evident that grain-crop average has definitely been expanded since 1920. The area used for grain is slightly greater than in 1930 inspite of the retirement of farm land held under the Bankhead-Jones Act. Wheat yields in the area are compared with precipitation records for the years 1910 to 1950 in figure 1. The price of wheat for each year is also given. Precipitation, its efficiency and distribution, are major factors in determining yields of grain in the Milk River area. The affect of total and seasonal rainfall on yields in Phillips County over a 41-year period are directly comparable in figure 1.

The factors of climate, yield, and price all influence the acreage of wheat planted. During some years, the area planted has also been affected by Government control. This control was apportioned to each operator as a wheat allotment on the basis of the area which he had planted in wheat during a base period of years. The area planted with wheat, the area harvested, and the area abandoned in Blaine, Phillips, and Valley Counties for the years 1919 to 1950 are shown graphically in figure 2.

The marginal character of dry-farmed wheat production in the area is clearly shown in figure 1. In eight of the thirty-five years, from 1916 to 1950, precipitation has been less than ten inches per year. During the same period, yields have been below nine bushels per acre for thirteen years. Nine bushels per acre may be regarded as approaching a break-even point for average wheat operators in the area. During these years, the price of wheat has been below one dollar per bushel sixteen years, and was below 65 cents seven years. The price of wheat is now supported by many countries. Increasing population and other factors also tend to hold up the price of wheat. It is possible that the return of a free economy could considerably lower wheat prices in years of high production or depressed trade. Present conservation practices have improved wheat yields. Price support has leveled out wheat prices. The drought and consequent low yields in 1949 showed that nature still wields a controlling hand in the area.


PRECIPITATION AT MALTA, ACRE YIELD OF WHEAT IN PHILLIPS COUNTY AND THE PRICE OF WHEAT PER BUSHEL IN MONTANA, 1910-50
INCHES-20
PRECIPITATION AT MALTA
15
AVERAGE ANNUAL 13.07 INCHES
AVERAGE SEASONAL 10.03 INCHES
10
5
0
SEASONAL-6 MO.
ANNUAL
1910
11
12
13
14
15
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43
44
45
46
47
48
49
50
BUSHELS-20
WHEAT YIELDS PHILLIPS COUNTY AVERAGE 9.4 BUSHELS
10
0
(NOT AVAILABLE)
$2.00
PRICE OF WHEAT PER BUSHEL IN MONTANA AVERAGE $1.15
1.00
0

Figure 1.

ACRES PLANTED AND ACRES HARVESTED ALL WHEAT IN BLAINE, PHILLIPS, AND VALLEY COUNTIES, MONTANA, 1919 TO 1950

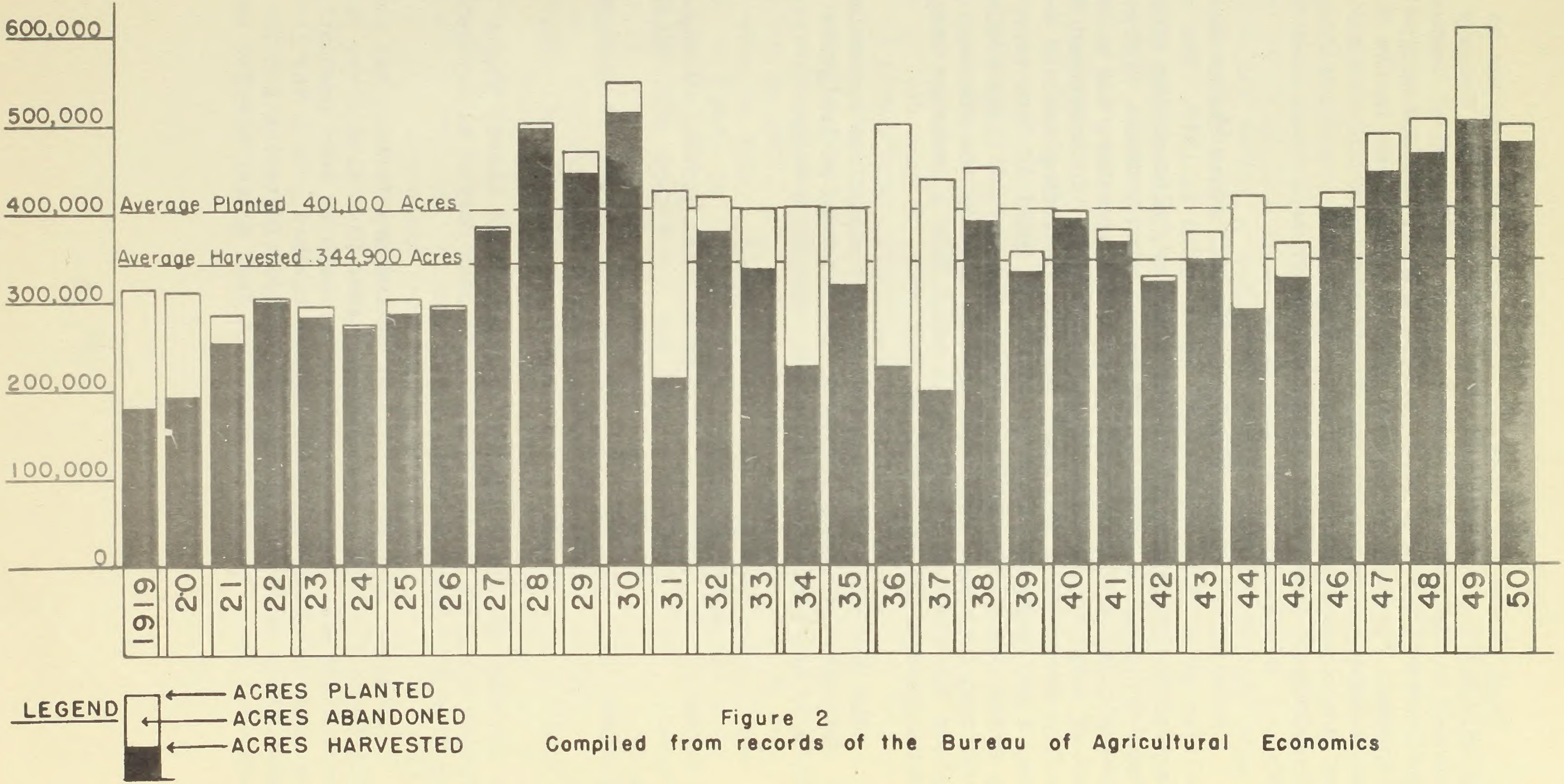


Figure 2
Compiled from records of the Bureau of Agricultural Economics

Sugar beets are important both as a cash crop and as a source of livestock feed in the area. The Utah-Idaho Sugar Company Mill, formerly located at Chinook, had a capacity of 1,600 tons of beets. The machinery was removed from this mill in 1951. Beets are now shipped to Sidney, Montana. The beets are grown on irrigated lands in the Milk River Valley. Beets tops and pulp are fed to livestock, usually with other roughages and grain produced on the farm. Sugar beet producers frequently have no livestock of their own. These operators sell their beet tops to livestock men.

Farming has become highly mechanized since the recovery of crop production after the long drought which ended in 1937. The non-irrigated acreage is cropped in north-south strips, alternating with summer fallow. Strip-cropping is practiced to combat wind erosion. Larger farm units have yielded profitable returns for the operator, and allowed full use of large-scale labor-saving machinery. In homestead days, a family was limited to a half section, including pasture and cropland. Now, a non-irrigated unit is rated too small if less than four sections in area. Powerful tractors, with comparable tillage tools and large combines, have made this increase in size of the economic unit. High prices for wheat and high labor costs have stimulated large-scale mechanization and increased production.

The Milk River Reclamation Project comprises approximately half of the total irrigated acreage. The acreage of irrigated and irrigable lands in the project are listed in the table below.

	Pump	Gravity		Total	
Division	Irrigated & Irrigable	Irrigated	Irrigable	Irrigated	Irrigable
Chinook	3,692	28,549	43,484	32,241	47,716
Malta	1,698	25,827	53,733	27,525	55,431
Glasgow	1,834	10,130	19,407	11,964	21,241
Total	7,224	64,506	116,624	71,730	123,848

In addition to the irrigable acreage listed above, 59,000 acres on the Glasgow bench in Valley County have been mapped as irrigable by pumping from Fort Peck Reservoir.

Integration between irrigation and dry farming has progressed satisfactorily over a considerable area near Milk River Valley. The combination has been especially favorable in beef production, since the dry land provides spring and summer pasture, while the irrigated farm practically insures a supply of feed for fattening and for winter maintenance. Most of the roughage and feed grains are fed to livestock on farms, and only a small part is sold. During severe winters, hay is sold and trucked up to seventy miles to outlying districts. There is no general movement of stock from distant areas to Milk River Valley for winter feeding. Harvesting dry-farm crops by combines usually leaves the farms with little roughage for use during winter when range is not available. Flood irrigation systems have been constructed on suitable sites on range land to produce winter forage. Nevertheless, a large area north of Milk River is exposed to severe winter conditions, and operations are specially hazardous during years of drought when there is a low reserve of cured standing grass.

The major source of agricultural income in Blaine and Phillips Counties was from livestock and livestock products in 1949. Valley County obtained more income from crops as reported for 1949. However, the agricultural census of 1945 shows a greater value of farm products sold in 1944 in all three counties, the total for the three counties amounting to two-and-one-half times the value of livestock and livestock products sold. The rise in value of livestock and livestock products sold in 1949 over 1944 was due largely to the increase in prices for these products. In numbers, there were a few more cattle in the area in 1949 than in 1944, but the reduction in sheep numbers was greater in proportion. Expressed in animal units, with five sheep counting as one unit, the combined sheep and cattle numbers amounted to 203,940 animal units in 1944, and 197,420 animal units in 1949. The value of livestock of both classes in the area was $13,243,910 in 1944, and $26,974,900 in 1949. The price of wool increased from 44 cents in 1944 to 53 cents in 1949. Sheep increased in value from $9.10 per head in 1944 to $18.70 in 1949. Cattle valuations increased from $73.90 per head in 1944 to $141.00 in 1949. The dry year of 1949 stimulated livestock marketing.

A comparison of crop conditions and production of 1944 with 1949 is as follows: the rainfall at Malta was 11.97 inches in 1944, with 9.66 seasonally; in 1949, the figures were 7.58 inches and 5.00 inches respectively. There were 412,200 acres of wheat planted in the study area in 1944, and 398,000 acres were harvested. The area planted in 1949 was 603,500 acres, but only 498,500 acres were harvested. The yield of wheat in 1944 was 17 bushels per acre; in 1949, only 5-1/2 bushels. The price increased from $1.32 per bushel, in 1944, to $1.86 in 1949. The value of non-irrigated crops in 1949 was $18,020,200, and of irrigated crops was $5,710,900 in Blaine, Phillips, and Valley Counties. For 1949, the corresponding values were $8,124,200 and $7,417,200. These values reflect the affect of a dry year, such as 1949, on income from dry farming in contrast to the more stable income derived from irrigated land.

The taxable numbers of livestock reported from the three counties in 1950 were 113,066 sheep, 111,197 cattle, and 8,260 horses. The numbers in 1940 were 302,253 sheep, 62,273 cattle, and 17,873 horses. These statistics indicate a reduction of two-thirds of the sheep and one-half of the horses in the ten-year period. Numbers of cattle doubled during the same period. The highest per cent reduction in sheep was in Phillips County, 78 per cent; and the lowest in Blaine County. The highest cattle increase was in Phillips County, 99 per cent; and the lowest in Blaine County. Horse numbers were cut over 50 per cent in all three counties.

Forest Products, Recreation, and Wildlife

Practically no commercial timber is present in the area. A few posts and poles have been cut for local use. In the Bearpaw Mountains timber has been picked over closely, and the usable trees have all been cut out. Timber in the Little Rockies was burned in a devastating fire in 1936. Juniper is present in the Missouri breaks. The timber included in the area is valuable mainly for watershed protection and game habitat.

Recreation facilities have been planned and developed along Fort Peck Lake shore by the Corps of Army Engineers. An improved camp with cabins is available at The Pines, on the north shore, in Valley County. Complete facilities are also available at Fort Peck, near the dam. The lake affords fishing and other aquatic recreation. The American Legion operates a hot-springs plunge northeast of Malta. Nelson Lake and Milk River provide fishing. Antelope, deer, upland birds, and waterfowl provide hunting. A group camp is located near Landusky in the Little Rockies. This camp was converted from an old CCC camp.

Big game numbers vary greatly because of antelope migration from and to Canada. These migrations may include several thousand animals and extend southward over Fort Peck Lake during the winter, when they can cross on the ice. Estimates by the area manager of the Bureau of Land Management list 4,400 mule deer, 1,100 whitetail deer, 3,500 antelope, and 184 elk. In addition to the 3,500 resident antelope, there may be 5,000 migrating antelope. The elk were planted recently in the Missouri River breaks by the State Fish and Game Department.

Migratory birds are numerous in the area in the vicinity of Bowdoin refuge. An abundance of ducks and geese make this a favorite hunting area. Pheasants are numerous in Milk River Valley. Sage grouse, pintail grouse, and Hungarian partridge are found generally on upland, especially near dry-farm tracts. Possibilities for further development of migratory bird refuges have been investigated by the Fish and Wildlife Service. Their program will be considered in connection with the proposals for management of public lands. Brush-covered tracts of public domain along Milk River provide cover for pheasants. The State Fish and Game Department has indicated that these tracts are desired for that purpose, and for cover for whitetail deer.

Land Management Programs

Over half of the land in the Milk River Basin is privately owned. Land in federal and state ownership is nearly half of the area. Federal government land totals 4,045,323 acres, or 43.5 per cent of the area. Details of land ownership in the area by counties are shown in table 2. Government agencies administering lands in the area are the Bureau of Land Management, the Soil Conservation Service, Bureau of Reclamation, Bureau of Indian Affairs, the State of Montana, the Forest Service, Fish and Wildlife Service, and the War Department. Location of lands under the various types of ownership is shown on the map accompanying this report.

Land administered by the Bureau of Land Management totals 2,162,370 acres, or 23 per cent of the area. Distribution of this land is shown on the map with this report. Public domain lands are concentrated on the rough lands with clay soils in the breaks of the Missouri River, and on comparatively poor soils and sites in other areas. The Title III sub-marginal purchased lands are a part of Montana Land Utilization District No. 2. They cover an area of 971,113 acres scattered throughout northern Blaine and all of Phillips and Valley Counties. Much of the "LU" (Land Utilization District) land is in fairly large blocks of contiguous parcels. Fort Belknap Indian Reservation is located in the southwestern part of the area. Blocks of Turtle Mountain Indian allotments are located west of the reservation, north of Harlem, and north of Malta. Land in Indian ownership totals 663,330 acres in the area. The Lewis and Clark National Forest of 21,061 acres adjoins the reservation on the south.

The Fort Peck game range was established by the executive order of December 11, 1936. This order provided for joint jurisdiction by the Secretaries of Interior and Agriculture. The Secretary of the Interior was given exclusive jurisdiction over the public grazing lands and natural forage resources provided "that the forage shall be first utilized for sustaining in a healthy condition a maximum of 40,000 sharptail grouse and 1,500 antelope, the primary species, and such non-predatory secondary species in such numbers as may be necessary to maintain a balanced wildlife population, but in no case shall the consumption of forage by the combined population of the wildlife species be allowed to increase the burden of the range dedicated to the primary species." The Department of Agriculture was named in the executive order at the time when the Biological Survey was in that department.

The total area involved in the game range amounts to 947,000 acres. It is located on both sides of the former channel of the Missouri River, most of it being on the south side. Of the total 786,950 acres of former public domain in the game range, 373,622 acres is situated north of the river or within the boundaries of the area covered by this report. In addition, this portion of the game range includes 54,000 acres of land purchased by the War Department, three-fourths of which is now submerged. Of the total 373,622 acres of game range withdrawal, approximately 51,515 acres are submerged at the maximum level of the reservoir.

Rough breaks border the shore line of Fort Peck Lake, forming a very irregular shore line with former high ridges extending far into the lake. The boundary of the game range crosses many deep drainage channels. Much of the land above the high water contour is rough and unsuitable for grazing by domestic livestock. On accessible areas there is considerable competition between livestock and big-game animals. There is no practical way to segregate the lands suitable primarily for game animals. Regulation of numbers constitutes the most effective control which can be used in the adjustment of use between domestic stock and game animals.

By joint regulations of March 9, 1937, and by agreements made with the Fish and Wildlife Service in 1945, 1946, and 1947, steps were taken to protect the resources of the game range. It was agreed to make annual joint inspections of the range and make a census of wildlife population every five years. The need for a long-range program was recognized; and, in a meeting of interested agencies held on October 19, 1951, it was decided to make a survey of forage resources for both livestock and wildlife, in order that definite number limitations can be set for all classes of game animals and livestock.

The public domain lands administered by the Bureau of Land Management are located within Montana Grazing District Number One, with the exception of 35,560 acres outside of the grazing district boundary in Chouteau County. Grazing privileges in nearly all of the public domain lands in the grazing district are administered by the state grazing districts under a cooperative agreement. The agreement with each state cooperative grazing district provides that the district estimate and set carrying capacity on the public domain, determine the number and kinds of livestock and season of use, with the approval of the Bureau of Land Management. The district is required to take steps to protect

Table 2. - Land Ownership by Counties within the Milk River Basin Area, Montana, 1951

	Blaine County	Chouteau County	Phillips County	Valley County	Total
Public Domain					
Within Grazing District	263,450	12,324	734,680	649,452	1,659,906
Outside Grazing District		35,560			35,560
Withdrawals					
Stock Driveways				1.157	1.157
Power Site within Grazing Dist.	4,229				4,229
Power Site outside Grazing Dist.		4,230			4,230
Reclamation within Grazing Dist.	13,098		62,046	6,028	81,172
Reclamation outside Grazing Dist.				2,494	2,494
*Fort Peck Reservoir Site and Game Range					
Above High Water Line			39,653	61,246	100,899
Below High Water Line			5,790	45,725	51,515
*Fort Peck Game Range Only			164,261	56,947	221,208
Total Land Administered by Bureau of Land Management	280,777	52,114	1,006,430	823,049	2,162,370
War Department Purchase					
Above High Water Line			8,704	5,229	13,933
Below High Water Line			13,142	26,579	39,721
Black Coulee Bird Refuge	640				640
Bowdoin Bird Refuge			11,937		11,937
National Forest			21,061		21,061
Indian Lands					
Turtle Mountain Allotments	26,606		33,145	200	59,951
Fort Belknap Tribal	79,449		18,214		97,663
Fort Belknap Allotted	411,400		94,316		505,716
Fort Peck Outside Grazing Dist.				161,218	161,218
Title III Bankhead-Jones (SCS Admin.)	198,999		359,104	387,480	945,583
(Indian Admin.)	20,769		4,761		25,530
Total Federal Land	1,018,640	52,114	1,570,814	1,403,755	4,045,323
State Land Within Grazing Dist.	189,860	1,200	176,592	98,769	466,421
State Land Outside Grazing Dist.		24,312		240	24,552
Total of Federal and State Land	1,208,500	77,626	1,747,406	1,502,764	4,536,296
Private Land Within Grazing Dist.	1,530,060	7,465	1,636,274	1,323,057	4,496,856
Private Land Outside Grazing Dist.		266,035			266,035
Total of Private and State Land	1,719,920	299,012	1,812,866	1,422,066	5,253,864
Total Land Within Grazing Dist.	2,738,560	20,989	3,383,680	2,661,869	8,805,098
Total Land Outside Grazing Dist.		330,137		163,952	494,089
Grand Total	2,738,560	351,126	3,383,680	2,825,821	9,299,187

(*) Jointly administered with the Fish and Wildlife Service.

the land from overgrazing and improper use, and assumes responsibility for the maintenance of all improvements on public domain. The area manager of the Bureau of Land Management may certify grazing permits involving use of public domain.

State Grazing Districts

The state cooperative grazing districts were authorized by a state law enacted in 1933, which was amended in 1935. This law was thoroughly revised by the passage of the Grass Conservation Act in 1939 (Ch. 208). The district is empowered to lease or purchase grazing land and to allocate grazing privileges among members and non-members. A local board of directors is elected to carry on the business of the district. A secretary is hired by the board to maintain records, keep up correspondence, and perform other duties delegated by the board.

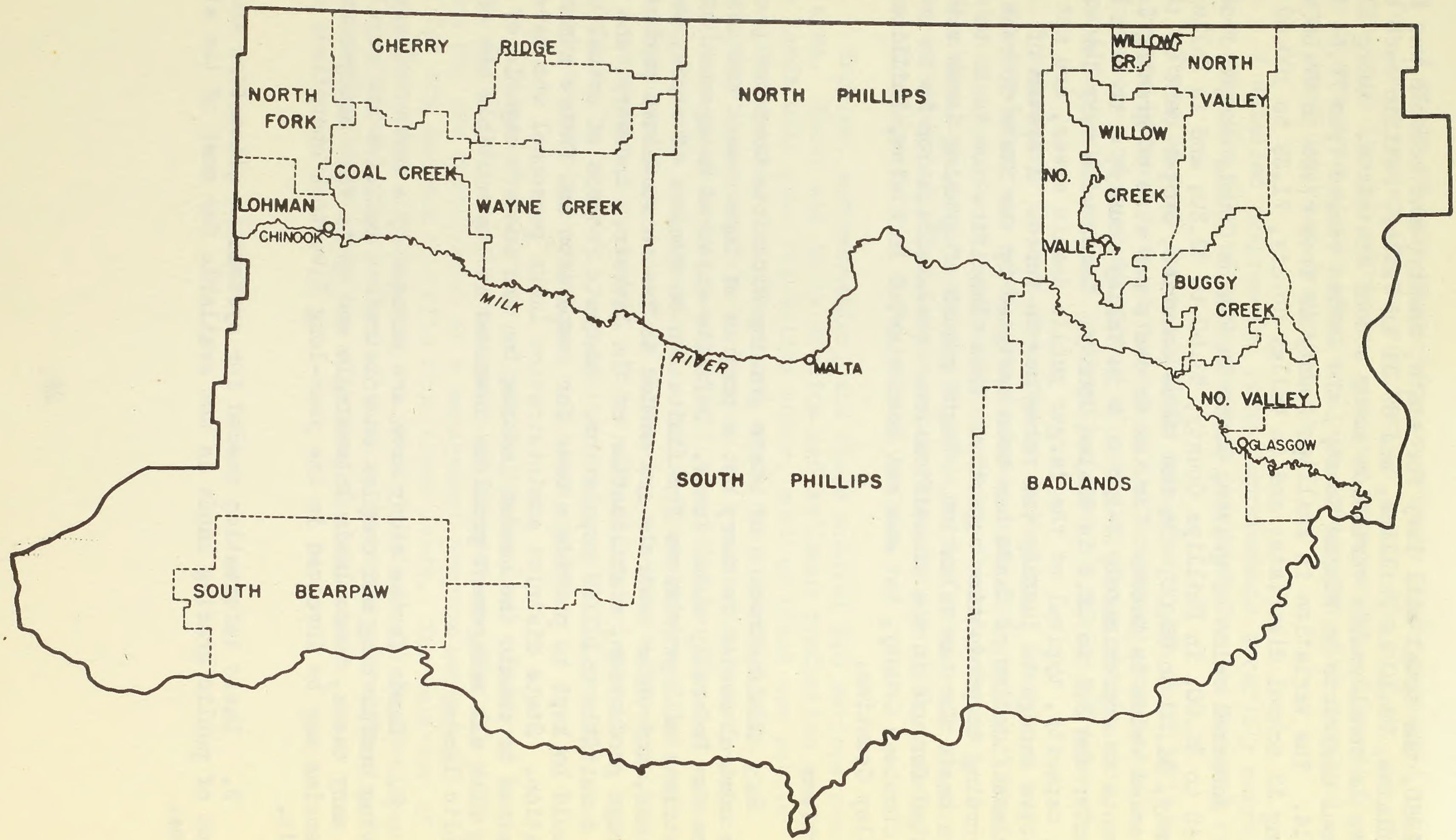
The state district is required to control at least 50 per cent of the district lands. Collective or group action by the state district was quite effective before 1940. At that time there was greater acreage of uncontrolled county and absentee ownership lands available. Leasing of these lands by the state grazing district furnished the protection necessary to prevent use by itinerant stockmen. Later, many of these lands were purchased by members and outside stockmen. As competition for land increased, the district experienced more difficulty in maintaining leases. As cooperative efforts became less profitable, the loyalty of the members diminished, and mutual suspicions increased in some cases. In many instances, permits were not kept consistent with priority and commensurability qualifications. Experiences of past years have shown the need for trained administrative personnel who are not personally involved in local controversies and who are qualified to keep the necessary records. The administrator should establish and operate a long-range plan which will insure the highest use of the land, and provide for stabilization of the livestock and other industries of the area.

Only annual permits have been issued by state grazing districts. Ten-year permits would tend to stabilize the ranch units and aid in application of sound range management. Dependent property and priority determinations are needed to definitely establish demands of all ranch operators.

Taxation

Taxes have had a strong influence on the disposal and management of public lands and the purchase of private lands by the Government.

STATE COOPERATIVE GRAZING DISTRICTS, MILK RIVER AREA, MONTANA, 1951



In 1950, the total mill levy for state, county, and schools was 84.76 in Blaine, 78.10 in Phillips, and 87.14 in Valley. Within each county there is considerable variation among school districts. Among 21 school districts in Blaine County, the levies ranged from 78.54 to 94.14. The variation in Phillips County is from 67.35 to 97.08 mills among 32 school districts; and in Valley County, 71.83 to 100.89 mills.

Assessed value of grazing lands in Blaine County ranged from $1.40 to $5.00; in Phillips County, $1.60 to $3.20; and in Valley County, $1.00 to $3.00. In the three counties, 30 per cent of the assessed value is taxed. The tax in cents per acre of grazing land amounts to approximately 2-1/2 to 8 in Valley County; 3 to 9 in Phillips County; and 3.5 to 12.5 in Blaine County. Lands with very low carrying capacity, typical of the larger public domain areas, are not productive enough to justify tax rates now in force. A system of reclassification of lands has been designed by the State to rate land according to productive capacity. This classification is to be used as a basis for tax valuation. Eight grades of grazing lands are listed for use in the classification. Reclassification is in progress in Chouteau County, but has not been started in Blaine, Phillips, and Valley Counties.

Problems

1. Administration of state grazing districts does not provide the control needed to carry out a program of improvement and maintenance for Federally owned lands. Definite enforced management of the districts with provisions for limitation on numbers of stock, season of use, and other controls are needed to insure sustained maximum forage production, stabilization of the livestock industry, and support of a suitable wildlife population. Adequate records of actual use should be kept to provide a base for comparison and future administration. State district administration lacks personnel who have been trained to obtain the needed information and who are capable of dealing with all management problems involved in the multiple use of public lands.

2. Lands in the study area are managed by a number of agencies having conflicting and complex administrative policies and regulations. In many cases, these lands intermingle and up to five management agencies may be involved in the year-long livestock operations of one unit.

3. Basic information needed for systematic allocation and management of public grazing lands is not available for most of the study area.

4. A study of base properties or private lands dependent on public lands for their proper use is required to insure the highest use of all lands involved through effective land-use integration. Livestock production in the area should apparently be integrated with cropland use, both dry-farmed land and irrigated land.

5. A detailed program for range improvements carefully correlated with a suitable plan of management is required for the Federal range.

6. There is need for a wildlife management plan which will maintain a proper balance between livestock and competing game animals. A range inventory and periodic check of numbers, range utilization, and range condition will provide information used in making adjustments.

7. Adjustment in land use appears necessary. Some land best suited to dry-farm crop production is being used for grazing. Other land which should not be cultivated are being farmed. Careful classification and proper use of all lands in the area would be to the ultimate advantage of all land owners in the area, as well as being of economic advantage to the state and its people.

8. Erosion, sedimentation, and flood control are serious problems in the area. Sheet and gully erosion and sediment production are problems on lands with poor vegetative cover, much of which are public domain. Conservation structures and practices, combined with good land management, can do much to improve this situation. Each watershed should be studied and recommendations should be made for conservation improvements and practices. Willow Creek drainage has been treated with considerable contour furrowing and some water-spreading systems, combined with seeding. These structures and practices have been effective in improving vegetative cover, reducing run-off, and in increasing moisture retention and soil development.

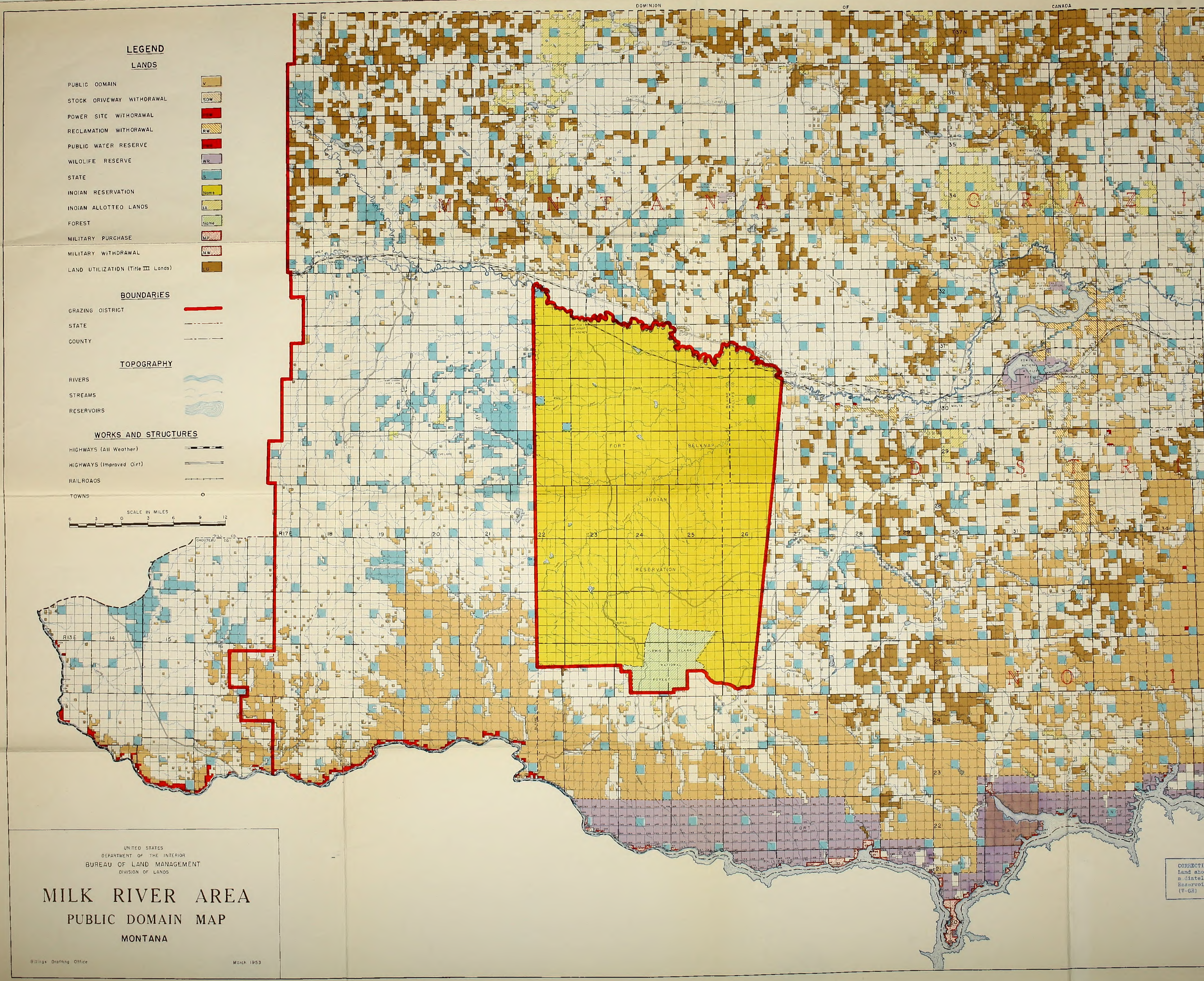
9. A detailed inventory of public domain land resources is required to facilitate the determination of highest use for all public lands and for the formulation of a management program which will provide for the maximum benefits from these lands. The relation of lands in other types of ownership to public lands would be developed in such a detailed survey. Need of such an inventory is emphasized in the preceding eight problems affecting the study area.

DIVISION OF LANDS

MILK RIVER AREA

PUBLIC DOMAIN MAP

MONTANA



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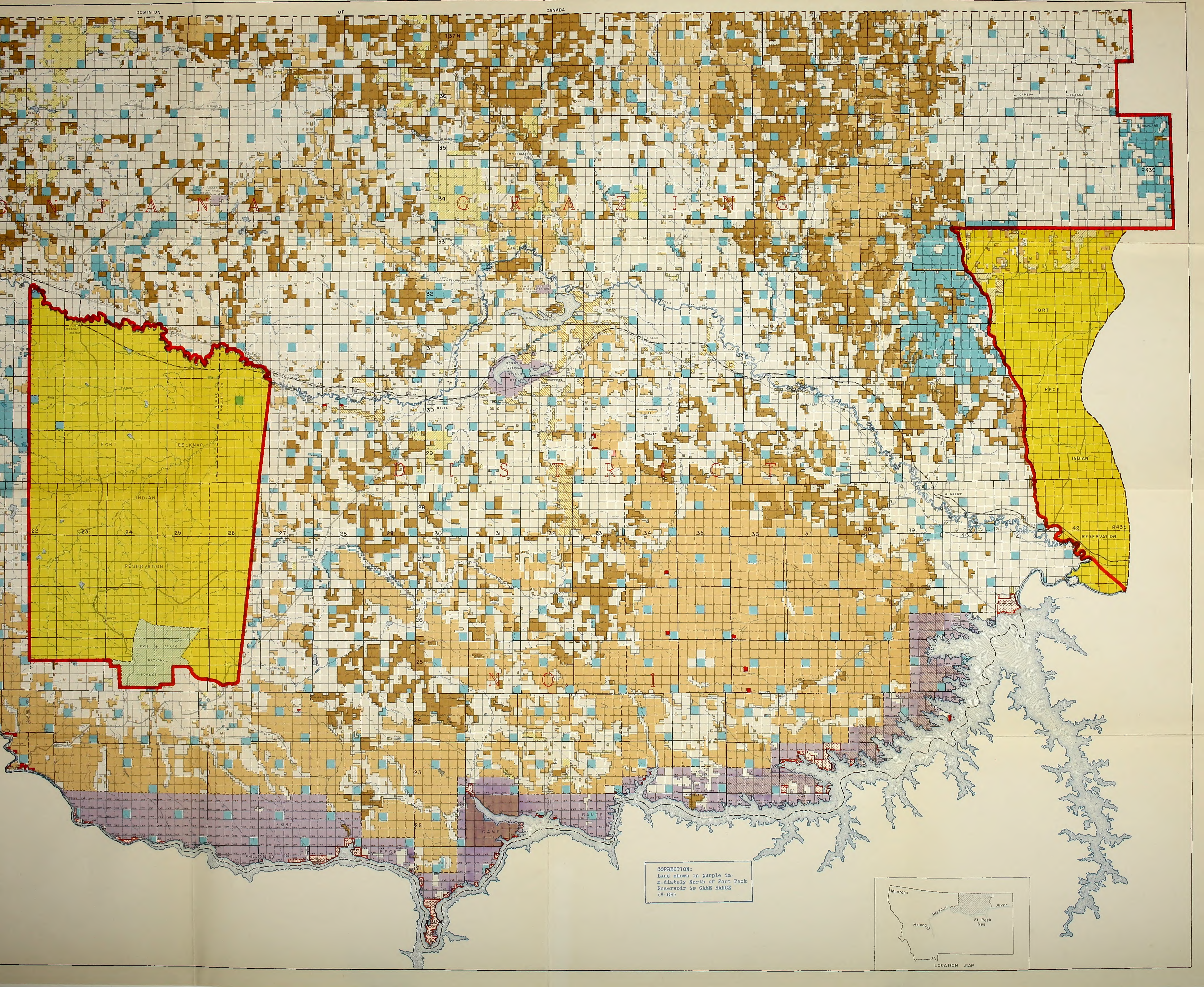
UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
DIVISION OF LANDS

MILK RIVER AREA
PUBLIC DOMAIN MAP
MONTANA

Billings Drafting Office

March 1953



CORRECTION:
Land shown in purple immediately North of Fort Peck Reservoir is GAME RANGE (V-GR)

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